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'Riff(le)s at this 'rock festival' include J-hooks and cross-vanes

By JOHN EBY / Dowagiac Daily News
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Scores of people interested in the ongoing pilot meander restoration project at Arthur Dodd Memorial Park in Pokagon Township toured the site Thursday following a program and lunch at Dowagiac Conservation Club.

"Project Review Day" was sponsored by MEANDRS (Meeting Ecological and Agricultural Needs within the Dowagiac River System), Cass County Conservation District and St. Denys Foundation for engineers, consultants and municipal representatives of the portion of the project funded by the St. Denys Foundation of Dowagiac.

Jay Wesley, a fisheries expert with the Michigan Department of Natural Resources (DNR) presented an historic overview at the conservation club north of Dowagiac, including slides of Michigan's first fish hatchery in 1873 at Crystal Springs Campground, where brook trout, California and Atlantic salmon, grayling, eels, bass, pickerel and carp were raised; the Ndowagatuk, a "shallow, sluggish stream"; wetlands, the breeding grounds of mosquitoes that infected many early settlers with malaria; and Dowagiac River dredging and straightening, with initial dredging done by steam shovel mounted on a barge.

Dredging shortened the river by five miles, lowered the water table by three feet, created high banks and a 15-mile homogeneous habitat and separated the river from its floodplain.

Wesley explained the three types of riffle structures to be used in the restoration - cross-vane with footer rocks as anchors; J-hook with footer rocks; and traditional riffle structures. The curve in the meander channel required use of a variety of different riffle structures.

MEANDRS' mission is protecting and restoring the ecological function of the Dowagiac River system while maintaining agricultural-based infrastructure in the community.

Further, the organization wants to improve the recreational potential of the river, such as trout fishing.

MEANDRS is a community-based organization that draws on the expertise of local agencies such as the Cass County Parks Department, Cass County Conservation District, the tri-county Southwestern Michigan Commission, state agencies such as the DNR, Department of Environmental Quality (DEQ) and federal agencies such as the Army Corps of Engineers.

A number of other organizations, such as the St. Joe River Valley Fly Fishers, Trout Unlimited, the Dowagiac Mill Pond Association and land conservancies, are also involved in MEANDRS.

MEANDRS projects besides pursuing the meander restoration for 12 years include a 1996 flyover of the river, a macroinvertebrate survey, fish surveys, a riparian/stakeholder survey, the Dowagiac River Watershed Project and university studies.

The meander channel restoration at Dodd Park will gain knowledge for future meander restorations on the Dowagiac River, test engineering techniques and allow the community to see first-hand the benefits of meanders as well as their impact on drainage.

A dredge removed an estimated 12,000 cubic yards of organic sediment from the old meander channel on April 5.

A retention basin constructed to hold dredge spoils was filled to about six inches from the top, then slowly drained down. De-watered sediments were to be used later in the project. Soil in the basin was incorporated into diversionary structures.

Two large, diesel-powered pumps had to be brought in during the dredging operation to raise the water level in the meander to allow the dredge to navigate a shallow area, which incurred MEANDRS an unexpected \$5,000 rental expense.

Pumps ran 12 hours daily for about three weeks, moving thousands of gallons of water through six-inch pipes from the Dowagiac River into the meander channel.

To keep water in the meander, a temporary coffer dam of soil had to be constructed to prevent the liquid from spreading onto adjacent wetlands north of the project.

The engineering portion of the meander restoration project was completed in 2000-01 by Tetra Tech MPS of Ann Arbor, Inter-Fluve and the Abonmarche Group. Engineering plans Tetra Tech developed in the \$23,500 design phase form the basis for restoration.

April 6 the downstream outlet of the original meander channel was opened to drain and de-water the meander to allow necessary grading and bank stabilization to begin.

In a few days, the water level in the meander channel dropped to about one foot in depth or less in the upper reaches of the meander.

Huge mounds of rocks brought to the project site were used in the construction of riffle structures and bank stabilization.

After the meander drained, the outlet was closed again so sediment from grading and rock moving would not be released into the Dowagiac River. Sedimentation from the grading was allowed to settle out in the lower basin before water was released back into the river.

Wesley said the diversion structure is designed to divert all flows up to a "500-year event." Its upstream face shall consist of seeded soil lifts encapsulated in coir fabric. The diversion structure will be covered with coir fabric, seeded and planted with container tublings inserted through the coir fabric on 5-foot centers of native shrub planting.

Instream cover will be large trees with a diameter over 12 inches, with as much of the crown and rootwad as possible laid on their sides; rootwad pointing upstream in an excavated trench and buried about 50 percent. Trees excavated during construction can be used. Pool habitat upstream will be excavated and used on the inside of the bend to create a combination of pool and point bar. These features should promote the sorting of gravels and the creation of diverse habitat.

Contractors estimated a \$250,000 to \$290,000 cost. Typically, meander restoration nationally costs \$500,000 to \$1.5 million per mile. DEQ agreed to reserve unspent grant funds of \$80,400 and gave a nine-month extension to Sept. 30, 2002. The Army Corps of Engineers was interested in the project if MEANDRS partnered with the DNR, but the Iraq war and Hurricane Katrina provided further delay, although in 2005 the DNR Fisheries Division came to the rescue with a crew to do some of the excavation and meander construction.

Projected costs of \$131,992 with a 36.9-percent local match amounting to about \$48,589 were offset by Road Commission rock donations, reduced price on concrete blocks from Consumers Concrete and services provided by Cass County Conservation District.



A tour participant examines the construction with 600 tons of rock of riffle structures and bank stabilization in the original meander channel